

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F &amp; Remarks page 2

the general concept says "The DLF serves as a complete luminaire solution... such that the individual characteristics of each lamp's light are combined in operation to achieve a sum of the characteristics presenting a benefit not achievable from a single source alone." and the figure clearly shows "multiple solid state light sources" and the "mechanical base" apparatus which [0097] "facilitates affixation to the building surfaces" the basis of claim 66 "The method of constructing ... wherein the structure is provided a unique orientation..." which is the laws of physics basis of claim 67 "method of constructing illuminating device of claim 66 ... through the calculation of Lamberts Law... based on the predetermined design illuminance".

The unique uniform illuminance capability is further described in Fig 2b and 2c and their description, represents one of the physical embodiments of the block diagram Fig 1and those illustrations are clearly non-distinct from the apparatus of claims 57, 58 and 67. Specifically, regarding claim 57, paragraph [00112] of the specification covering the elected species of Figure 2A states; *"In a position oriented lamp arrangement..., the light distribution can be nonsymmetrical and tailored to the needs of the room"*. This unique capability of the disclosed lighting fixture whose embodiment is described in detail in the following paragraphs produces the uniform illumination over non equidistant surface areas of claim 57. The specification behind the claim of "uniform illumination" says of the Fig 2B Type A, pear shaped lighting device is as follows:

[0082] A pear shaped globe "luminaire" shulded with LED's projecting light outward from the surface would give both down-light and up-light with more projection surface towards the down-light side in a typical 1 to 3 recommended ratio. Most buildings, rooms or areas to be illuminated are of a rectangular shape. The LED's on the DLF are concentrated at the 90-degree intervals.

[0115] In order to assure an even distribution of light from a point source over an area, it is necessary to take the effects of the angle and distance to the illuminated surfaces into account as stated in the inverse square law. Often a "batwing" type of candlepower light distribution is used. In a prior art luminaires the reflector, which concentrates reflected rays in the higher angles, accomplishes this. In a preferred embodiment of the MSLS there are more, or more powerful, SLS over a range 1 aimed at higher angles to increase light flux at those angles in order to maintain an even light distribution. If the lamp is specifically oriented in relation to the room concentrating more light into the distant corners effects a squared distribution pattern, which would fill in the corners of a square room with equivalent illumination. An added amount of SLS are added on the DLF body 24 at 90 degree angles on .beta., 27 where SLS aimings

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F &amp; Remarks page 3

will push added light into areas corresponding to the "corners". To effect uplight towards the ceiling or for indirect lighting SLS 23A are aimed towards the ceiling such that an optimal utilization of the light is achieved." By describing how to use the LEDs angular placements  $\alpha$  with the nadir and  $\beta$  in the horizontal plane in correspondence to the fixture mounting relative to the room surfaces the specification clearly details how a non-symmetrical lighting distribution is achieved yielding uniform illuminance.

5

Regarding claim 58 "wherein the design illuminance level is increased the task lighting illuminance on certain surface areas and general lighting illuminance over the rest of the surface areas the specification reads as follows: [0112] In a position oriented lamp arrangement, that is where the socket has a distinct stop point, detent or pin and is mounted substantially oriented to the room or its contents such as a work desk or wall painting, and also the DLF has a specific mounting orientation relative to the socket, then the light distribution can be nonsymmetrical and tailored to the needs of the room. The screw base 17 has a detent or pin 26 that coincides with the stop point on the socket, which is mounted in a specific location radially around the lamp at an angle  $\beta$ , 27 in reference to pin 26 and a design start point on the circumference of body 24. The SLS are placed at an angle  $\beta$ , horizontally and vertically angled  $\alpha$ , to illuminate specific areas and also have their own spatial light distribution angle  $\theta$ . sub.1 28A. The MSLS lamp will have concentrations of SLS at specific aimings to provide a wide "flood" type distribution to one part of the room and a "spot" type distribution to another such as to a painting on the wall. Each illumination target is at a different light intensity and color temperature or color rendering. [0113] In another embodiment SLS, which perform an equivalent to a task light function with a very narrow beam, are combined with SLS performing a general background lighting function in one fixture. The specification describes the form of an illumination device so mounted in relationship to a living space having various surfaces within requiring different lighting levels and the construction of the lighting fixture with light sources concentrated thereon such that it can provide the task illuminance levels in certain surfaces and general illuminance levels on the rest of the surface areas.

10

15

20

25

Regarding the pertinence of claim 67 to the elected species paragraph [00115] of the specification clearly elucidates how the inverse square law, "Lambert's Law", of claim 67 is used to determine the placement at angle  $\beta$  horizontally and vertically angled  $\alpha$  to illuminate specific areas. *"In order to assure an even distribution of light from a point source over an area, it is necessary to take the effects of the angle and distance to the*

30

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F &amp; Remarks page 4

*illuminated surfaces into account as stated in the inverse square law. In a preferred embodiment SLS over a range 30 aimed at higher angles to increase light flux at those angles in order to maintain an even light distribution which would fill in the corners of a square room with equivalent illumination. An additional amount of SLS are added on the DLF body 24 at 90 degree angles on  $\beta$ , 27 where SLS aimings will push added light into areas corresponding to the "corners".*

In light of the above clarification and explanations pointing out where claims 57, 58 and 67 are directed to the elected species the applicant submits that the claims should not be withdrawn from consideration as they are an integral part of the novel illumination device and are clearly described in the opening paragraphs describing the elected species.

### Amendments Under Rule 116

**In reply to point 5 & 6 – Claim Rejections 35USC §112: The specification shall**  
**Claims 50-56 are ...**

**The applicant requests that the claim 51 be amended as follows:**

Claim 51

51 (currently amended) The multiple light source illuminating device of claim 50 intended for positioning relative to one or more predetermined surface areas to be illuminated where some of the surfaces to be illuminated require a greater luminous exitance in the direction of that surface in order to be illuminated with the design illuminance comprising:

- a) a lighting fixture structure.
- b) a positioning apparatus to uniquely affix the structure relative to the predetermined surface areas to be illuminated.
- c) more than one light source mounted on the structure each said light source having a light distribution pattern and intensity about an axis and
- d) where said light sources are uniquely disposed over the surface of the structure relative to the positioning apparatus and angularly mounted on the structure with

7/19/2009 The predetermined surface areas further including apparatus providing the structure an orientation relative to the predetermined surface areas and where in response to said orientation, the multiplicity of light sources is arranged on the structure according to the respective light distribution patterns so that the surface areas are

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F &amp; Remarks page 5

the light distribution axis having a vertical angle  $\alpha$  from the nadir and a radial angle  $\beta$  relative to the positioning apparatus and

- e) where said unique disposition and angular mounting is determined by the greater or lesser luminous exitance required from portions of the relatively positioned lighting fixture structure so as to substantially illuminate the predetermined surface areas with the design illuminance.

5

Whereby the unique positioning of the light sources on the structure produces a nonsymmetrical light distribution pattern so that the surface areas are illuminated with the design illuminance.

10

#### **Claim Objections:**

**In reply to point 2 Claims 62 is objected to because of the following informalities...**

*Murkush elements should be equivalent...*

The applicant submits that power supply, controller, etc are equivalent types of lighting fixture auxiliary equipment. They are also called accessories in the lighting industry as they are not inherently necessary for the fixture's operation but are optionally added to increase one function or another thereon. They may be an integral part or physically joined in the same body as the lighting fixture as in the present invention or be auxiliary devices mounted separately. The claim has thus been amended to describe the items:

15

20

Regarding claim 63 "*lack of antecedent basis... said controller*" The controller had been previously mentioned above in claim 62d but nevertheless as requested the claim is now amended:

**Claim 62 has been amended as follows:**

62 (currently amended) The luminaire of claim 60, further including any digital lighting fixture accessory items from the list comprised of:

25

- (a) a power connection apparatus in communication with the mains power;
- (b) a power supply element providing current at a voltage to the light sources and other ancillary equipment;
- (c) a differentiated power supply element capable of varying power to the respective light sources said power supply arranged to effect an independent electric power

30

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F &amp; Remarks page 6

- signal differentiated in voltage, current or frequency to the respective light sources or group of light sources;
- (d) a controller for adjusting the power signal to the light sources such that a particular amount of power supplied to the light source generates a corresponding intensity and provides the correct intensity, spectrum, and spatial distribution of intensity and spectrum for the lighting application; 5
- (e) a storage media device capable of storing and recalling stored data relating to performance, algorithms and lighting parameters;
- (f) a controller capable of receiving inputs and by means of recalling stored parameters, processing algorithms, and calculating results, generates output control signals to adjust the illuminance according to the correct lighting practice; 10
- (g) a photosensor for providing light spectrum and intensity information to the controller, said information for use in said adjusting;
- (h) a motion detector for providing occupant sensing information to the controller, said information for use in said adjusting; 15
- (i) a communications element coupled to the controller comprised of a receiver for receiving a data signal from an external device;
- (j) a communications element coupled to the controller comprised of a transmitter for transmitting a data signal to an external device;
- (k) a remote control man-machine interface input device capable of communicating data with the communications element; 20
- (l) a machine vision system comprised of an imaging device, and object recognition coupled to the controller and
- (m) a mechanical assembly for the support of light sources, power supplies, controllers, sensors and other ancillary equipment. 25

**Remarks*****Claim Rejections: - 35 USC 112***

In reply to point 3 &amp; 4 Claims 50- 56, 59- 66 and 68- 69 are rejected to... narrative form 30

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F &amp; Remarks page 7

The pro-se applicant has written the claims to clearly describe the apparatus and method regarding the design and assembly of multiple light source illuminating structure. If the pro-se applicant has an error in a claim then he requests under M.P.E.P. § 2173.02 and §707.07(j) that the examiner should draft one or more claims for the applicant in the correct manner.

5

**Claim Rejections: - 35 USC 102****In reply to point 5 and 6: Claims 50-56 ...**

The examiner cites prior art "Zhang et al. US 6,227,679B1 discloses an illuminating device...". The applicant submits that Zhang [col 2, lines 25-30] clearly states the he discloses a device *"comprised of a plurality of LEDs that permit a 360° field of view, having about the same light intensity for various viewing angles."* The applicant submits that this *"same light intensity for various viewing angles"* is the exact opposite of the "non-symmetrical light intensities" of the illumination device of fig. 2A. The present disclosure in Paragraph [00112] describing figure 2A clearly describes the different goal, construction and functionality: *"In a position oriented lamp arrangement..., the light distribution can be nonsymmetrical and tailored to the needs of the room"*. The Zhang device actually further points out the novelty of the present inventive device. Here the novel combination of the provision for the unique orientation of the device to the room geometry and the unique non-symmetrical light output, resulting from the LEDs placements in accordance with Lambert's Law in anticipation of a specific room geometry creates for the first time a multiple light source lighting fixture with the capability of producing an equivalent illuminance on the surfaces over a 360° field of view (from the lighting device) without recourse to additional reflectors or refractors.

25

As Zhang's device has no apparatus for being specifically orientated to the room or surfaces which it is designed to illuminate his device will yield non-uniform illuminance on those surfaces. It is important to understand the difference between equal intensity and equal illuminance. Equivalent intensity of a point light source will not produce equivalent surface illuminance in a room unless said room is in the shape of a sphere, which is quite unusual. In a typical square or rectangular room a non-equivalent light intensity is

30

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F &amp; Remarks page 8

required. The Zhang device is incapable of providing equivalent lux on the room surfaces while the device of the present disclosure is capable. Thus the applicant submits that the Zhang invention disclosure does not read on the present invention.

**Claim Rejections: - 35 USC 112**

5

**In reply to point 7:** *Claims 61 is rejected over Zhang in view of Chen US6,820,998...*

The examiner has rejected Claim 61 wherein the intensity, spectrum, and spatial distribution of intensity and spectrum is adjusted for changes in a living space based on Chen who provides an LED lamp capable of detecting human body presence and ambient lighting. Many incandescent and fluorescent lighting systems exist for decades with such control. The uniqueness afforded by presently claimed control is novel in respect to the capabilities of lighting fixture to illuminate different areas in its purview differently. Since Chen's lighting device has no provision to alter anything other than the lighting intensity, it not obvious to provide the unique sensing of changes described in the present patent.

15

Paragraph [0064] states ... *This flexibility is useful as for example in a multi-source luminaire with spatially differentiated dimming capability used in an office lighting application. In a normal day's operation, such as in a windowed room between peak daylight and nighttime hours, the intensity and color temperature of the light varies greatly over different portions of the room. The smooth variation possible with many light sources ("digits") vs. one light source offers superior flexibility in providing the actual lighting needs.* Thus the present device is equipped with sensing capacity to deduce the ambient lighting on one side of a room versus the other and the color temperature of the illumination and having control to effect the light output to one side of a room versus the other is novel and unobvious since the capability of a lighting device to accomplish this was unknown to Chen or anyone else proficient in the art.

20

25

**In reply to point 8:** *Claims 63 is rejected over Zhang in view of Lys US 6,340,868*

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F &amp; Remarks page 9

**RECEIVED  
CENTRAL FAX CENTER  
JUL 20 2009**

In light of the novel capabilities of the presently disclosed lighting fixture to carry out spatially differentiated illumination both in intensity and spectrum as illustrated by the example in the paragraph above requires that the power supply be unique and is clearly described in the specification as in par. [0035] and [0101]. The power supply having current and voltage conditioning electronics affecting its magnitude, signal shape and timing and in its novel integration in an illuminating device comprised of electronic light sources made of diode junctions.

5

While Lys is controlling spectrum and intensity of the light sources these are not being controlled in relation to specific locations on the lighting fixture corresponding to illuminating differently specific surface areas in a room. A lighting device for illuminating performances provides a non-differentiated beam of light and has its own unique control requirements. The power supply in the present invention is novel in that it is capable of being controlled by sensors detecting environmental conditions and powering light sources in a non-uniform manner over the lighting fixture. Having relation to room geometry and illuminating surface areas differently it has many novel features over the computer controlled power supply Lys is using as described in the specification for example in par. [0103] within a calibration of the power supply to a spatially differentiated illumination spectrum. Thus it has been shown that Claim 63 clearly describes a unique design and method relevant only to multiple light source illumination devices having angularly differentiated light source mounted thereon as disclosed in this invention and not predicted by Zhang. And thus the invention is not obvious to a person of ordinary skill in view of Lys.

10

15

20

#### Conclusion

The applicant has revised the claims and requests that the above claims now be amended as in the new claims. The applicant submits that the claims are now in proper form to place the case in condition for allowance which action he respectfully solicits.

25

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F &amp; Remarks page 10

**Conditional Request for Constructive Assistance**

Should the examiner still prefer to have these or any or any other claims amended to more clearly highlight the uniqueness of the present invention, the pro se applicant requests under M.P.E.P. § 2173.02 and §707.07(j) that the examiner should draft one or more claims for the applicant and indicate in his or her action that such claims would be allowed if incorporated in the application by amendment. This request is in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

10

Very respectfully,



Yechezkal Evan Spero

74 Moshav Tifrach

M. P. Hanegev 85102

Israel

Tel: +972-54-440-7280

Fax: +972-8-996-0324

15

[yspero@netvision.net.il](mailto:yspero@netvision.net.il)

July 17, 2009

Application: 10/604,360 (Spero) Art Unit 2875 Amendment F & Remarks

page 18  
**RECEIVED  
CENTRAL FAX CENTER**

**Certificate of Facsimile Transmission:**

I certify that on the date below I will fax this communication to Group 2875 of the

**JUL 20 2009**

Patent Office at the following number:

Fax: (571) 273-8300

Date : January 19, 2007

5

Inventor's signature: Erin Spero